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Application Number	09/965,162
Filing Date	September 27, 2001
First Named Inventor	Steve E. Hoffman
Group Art Unit	3724
Examiner Name	Alie, Ghassen

Total Number of Pages in This Submission

12

Attorney Docket Number 9436-9US1 (147359)

ENCLOSURES (check all that apply)

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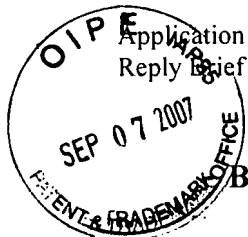
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Application Serial No.: 09/965,162
Reply Brief

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

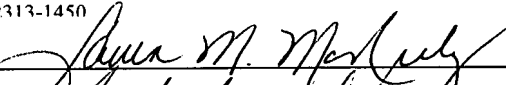
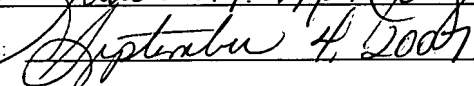
Applicant: **Steve E. Hoffman**
Serial No.: **09/965,162**
Filing Date: **September 27, 2001**
Title: **IMPROVED SAW BLADE**
Group Art Unit: **3724**
Examiner: **Alie, Ghassen**
Attorney Docket No.: **9436-9US1 (147359)**

REPLY BRIEF

Mail Stop: Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply Brief is being submitted in response to the Answer filed by the Examiner on August 1, 2007 in the above-identified application. This Reply Brief is being submitted within two months of the filing date of the Answer and is thus timely filed per 37 CFR 41.41(a)(1).

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1. STATUS OF CLAIMS

The Status of the Claims is set forth in the Appeal Brief. For compliance with MPEP 1208(I), it is repeated herein.

Claims 1-6 and 13-19 are currently pending in this application. Claims 7-12 were cancelled pursuant to a restriction requirement and are no longer pending in this application. Claims 1-6 and 13-31 were rejected in a non-final office action mailed from the United States Patent and Trademark Office on April 20, 2005. Claims 20-31 were canceled by an amendment filed on July 20, 2005. A final rejection was mailed on August 18, 2005.

Independent claim 1 and its dependent claims 2-6, independent claim 13 and its dependent claims 14-18, and independent claim 19, as presented, have been twice rejected. The appeal is from the rejection of claims 1-6 and 13-19. Appendix A to the Appeal Brief includes claims 1-6 and 13-19 as rejected.

2. ISSUED RAISED IN EXAMINER'S ANSWER

The Examiner's Answer raised the following issues which will be addressed in this Reply Brief:

- (A) The Examiner's Answer Presents Issues Not Properly Before the Board.
- (B) The Examiner's Answer Fails To Take Into Account Evidence Of Record.
- (C) The Examiner's Answer Uses Improper Hindsight and Makes Unsupported Assertions Regarding "Inherent" Properties Introduced by Vankov's Process.
- (D) The Examiner's Answer Mischaracterizes Appellant's Arguments Regarding Williams.
- (E) The Examiner's Answer Fails to Establish that Hashimoto Produces the Claimed Product and that a Person of Ordinary Skill in the Art Would Combine Hashimoto with Either Vankov or Williams.
- (F) The Examiner's Answer Fails to Address Appellant's Arguments Regarding Gakhar.

3. ARGUMENT

A. The Examiner's Answer Presents Issues Not Properly Before The Board

The Examiner's Answer is directed towards claims 1-6 and 13-31, even though only claims 1-6 and 13-19 remain pending in the application.

In particular, the Examiner's Answer reiterates the rejections set forth in the Office Action issued on April 20, 2005, which were directed to claims 1-6 and 13-31. However, in an Amendment filed concurrently with the Notice of Appeal on July 12, 2005, claims 20-31 were canceled from the application to reduce the issues on appeal. On August 18, 2005, a final Office Action was issued by the Examiner acknowledging entry of the July 12, 2005 Amendment, and listing the pending claims as 1-6 and 13-19. Thus, Appellant's Appeal Brief was directed only to pending claims 1-6 and 13-19.

Accordingly, the Examiner's Answer is improper to the extent it presents issues directed toward canceled claims 20-31. Because the canceled claims are not properly before the Board, Appellant will not address the issues raised by the Examiner in regard to those claims. (It is respectfully noted that the inclusion in the Examiner's Answer of rejections directed toward the cancelled claims suggests that the arguments in Appellant's Appeal Brief were not considered closely by the Examiner. This is further supported by the continued lack of consideration of certain evidence submitted during prosecution as pointed out in the Appeal Brief and as has happened again as mentioned below.)

B. The Examiner's Answer Fails To Take Into Account Evidence Of Record

The Examiner's Answer does not acknowledge, much less address, evidence submitted by Appellant that establishes a critical flaw in the rejections. In particular, Appellant's evidence establishes that the process limitations recited in the claims result in a structurally distinct product that is not disclosed in the prior art references, and could not result from the processes taught in those references.

The several Declarations included in the Appendix of the Appeal Brief provide factual evidence directed specifically to the rejections presented by the Examiner. This evidence provides proof that the rejections presented by the Examiner are not proper and should be reversed. The law requires that the Examiner consider such evidence when it is made of record.

Nevertheless, the Examiner's Answer does not indicate that the evidence contained in these Declarations was considered, and indeed, the Examiner's Answer does not even acknowledge this evidence.

C. The Examiner's Uses Improper Hindsight and Makes Unsupported Assertions Regarding "Inherent" Properties Introduced by Vankov's Process

None of the several arguments set forth in the Examiner's Answer establishes grounds for upholding that the claims are anticipated by or obvious in view of Vankov.

First, the Examiner improperly uses the teaching of the present application as the basis for his position that the surface polishing disclosed in Vankov inherently reduces residual tensile stress in a saw blade. (See Examiner's Answer at page 10, asserting that because the instant application recites that Applicant had "determined through testing that the precision polishing of the saw blade reduces and/or eliminates embrittlement of the blade" (page 10, lines 2-4 of the specification), therefore Vankov's surface polishing must also inherently result in a reduced embrittlement.) This is unquestionably improper hindsight reasoning. Moreover, the quoted portion the specification describes the result that occurs when a product is manufactured using the process recited in the claims, i.e., the properties of the claimed invention. Appellant's specification does not describe the resultant product manufactured using Vankov's process, nor what properties would be inherent in any product that has a precision finish, other than a product made using the process of the claimed invention.

Second, the Examiner sets forth the unsupported syllogism that because a roughened blade is inherently more brittle, and because electropolishing inherently reduces the surface roughness, that therefore, electropolishing reduces the embrittlement of the blade. The Examiner's most basic assertion is that the roughened blade "is inherently more embrittle [sic], since it is more susceptible to corrosion and hydrogen embrittlement," and that "embrittlement is a reduction in ductility due to physical or chemical changes." Next, the Examiner's reasoning follows, electropolishing both "removes the roughened edges of the blade surface and removes the hydrogen from the blade." Finally, the Examiner combines these two unsupported notions to reach the conclusion that electropolishing reduces "the embrittlement of the surface of the blade."

The Examiner's argument is not based in fact, and the Examiner has offered no evidence to support the conclusion that electropolishing reduces embrittlement in the metal blade of Vankov. In contrast, Appellant set forth substantial factual evidence and test data during prosecution of the application (and reiterated in the Appeal Brief) that the claimed process reduces embrittlement and residual tensile stress in the surface of a product but electropolishing does not. Appellant's test data compared a product produced using the claimed processing versus a product produced using an electropolishing process as in Vankov, and proved, beyond doubt, that the product made using the claimed process is structurally different from a product made using electropolishing. (See Appeal Brief at pages 8-12.) It is respectfully submitted that the evidence of record clearly undermines the Examiner's unsupported position that the electropolishing process described in Vankov results in a product that is substantially similar to that made using Appellant's process. To the contrary, Appellant's evidence makes clear that Vankov's process results in a different product that does not have reduced residual tensile stress. Yet none of Appellant's evidence and data are addressed in the Examiner's Answer, which instead merely asserts that Appellant's arguments were not persuasive.

As discussed in the Appeal Brief, a polishing operation does not inherently result in reduction in embrittlement. It was well understood by a skilled artisan in the field at the time of Appellant's invention that polishing smoothes the surface and reduces the Ra of a product, but it was not understood that polishing would result in a reduced brittleness or residual tensile stress. Rather, it was equally well known at the time that reduction in embrittleness could only be achieved through heating and cooling of the material or through a pounding of the metal by shot peening. Thus, the Examiner's unsupported assertion that any surface polishing process that decreases surface roughness, such as electropolishing, also inherently reduces embrittlement is completely contrary to what was understood by persons of skill in the art at the time.

While *In re Thorpe* holds that if a product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable, a rejection based on a prior product that appears identical simply shifts the burden to the applicant to establish that the process results in a structurally different product from the prior art. Appellant has more than met that burden with the evidence presented in the Appeal Brief, which proves that Appellant's

product is structurally different than Vankov's product. It is an error for the Examiner to fail to take this evidence into account when assessing the patentability of Appellant's invention.

In sum, it is respectfully submitted that the Appellant has established that the claimed product is different from any product that could be produced using processes in the prior art, thereby overcoming the rejection. Since the Examiner has not addressed the evidence presented in the Appeal Brief that counters the rejection, it is further submitted that the Examiner's Answer fails to present a proper rejection based on Vankov. Accordingly, Appellant respectfully requests reversal of the claim rejections based on Vankov.

D. The Examiner's Answer Mischaracterizes Appellant's Arguments Regarding Williams

The Examiner's Answer incorrectly asserts that "appellant acknowledges that Williams finishing process reduces residual stress." (Examiner's Answer at page 12.) Appellant has made no such acknowledgement. To the contrary, Appellant devoted nearly three pages of the Appeal Brief (pages 20-22) to discussing, with the support of test data, why the grinding operation disclosed in Williams would inherently introduce residual tensile stress into the product. As stated in the Appeal Brief, it is well known in the industry that a grinding process introduces tensile stresses into a product. Appellant has been unequivocal that the process of Williams would not reduce residual stress in a product, and the Examiner has been unable to point to anything in Williams to suggest otherwise. Williams discloses nothing more than the preferred material of the blank, the final surface roughness, and that the side of the blank is ground.

As an ancillary matter, the Examiner correctly notes that the claims do not set forth a specific decrease in residual tensile stress. This assertion is immaterial to the issues at hand. First, the law requires only that the process limitations in the product-by-process claim result in a product that is structurally different from a product that is not manufactured in accordance with the recited process. Appellant's evidence establishes this structural difference. Second, Williams shows no decrease in residual tensile stress, so regardless the amount of decrease in residual tensile stress created in Appellant's claimed product by using Appellant's recited process, the product is materially different from any product that may be produced by Williams.

In sum, the process of Williams creates an increase, not a decrease, of tensile stress in the product. Thus, Williams fails to anticipate the claims. Moreover, other than the aforementioned mischaracterization, the Examiner's Answer does not address the arguments specifically set forth in the Appeal Brief regarding the deficiencies of Williams. As such, the Examiner has failed to establish a proper rejection of the claims based on Williams. Accordingly, Appellant respectfully requests reversal of the claim rejections based on Williams.

E. The Examiner's Answer Fails to Establish that Hashimoto Produces the Claimed Product and that a Person of Ordinary Skill in the Art would Combine Hashimoto with either Vankov or Williams

1. Hashimoto Product Differs from the Claimed Product

Nothing in Hashimoto's disclosure indicates an awareness of the ability, much less the desirability, of imparting a reduction in residual tensile stress to the material being processed. More importantly, the mention by Hashimoto of "centrifugal processes" as one type of the vibratory surface finishing process in the same class of "conventional surface finishing processes" as "barreling, tumbling, rotating, agitating, spinning, [and] shaking" (Hashimoto, col. 4, lines 16-18) strongly indicates that Hashimoto does not contemplate the "high speed precision polishing process used in the present invention" (U.S. Pat. Pub. No. 2002/0078813 A1, para. 44). Hashimoto's process is contemplated as being relatively gentle and slow, as evidenced by the fact that it "takes place in a container, bowl, tub, or other similar receptacle" (Hashimoto, col. 4, lines 23-25). Thus, the high speed surface finishing process of the present invention is not a "conventional surface finishing process" because it differs in character from the other exemplary processes listed in the same sentence by Hashimoto.

The Examiner's Answer states erroneously that "Appellant fails to indicate at least one difference between the claimed surface finishing apparatus in the instant application and the surface finishing apparatus in Hashimoto." (Examiner's Answer at page 14.) Further, the Examiner incorrectly asserts that "the manner that the centrifugal surface finishing operates has not been claimed at all." (Examiner's Answer at page 14.) To the contrary, Appellant's claims expressly recite that the centrifugal process requires an inner vessel, in which the saw blade and the abrasive media are placed, and an outer vessel, the inner vessel being rotated relative to the

outer vessel at high speed to induce the surface finishing. The process of the present invention causes impingement of the abrasive elements against the exterior surface of a part similar to shot peening the part and sufficient to produce a universal compression of the surface of the metal. (See the present application, U.S. Pat. Pub. No. 2002/0078813 A1, para. 44.) These features describe a process that cannot be construed to fall within the conventional centrifugal process as recited in Hashimoto.

The scope of Hashimoto's disclosure covers vibratory finishing processes whereby "the abrading elements or media come into contact with exterior surfaces of the work pieces, thereby effectively displacing portions of the workpiece material from the exterior surface" (Hashimoto at col. 5, lines 27-30). Hashimoto provides no details as to use of a centrifugal process, but rather discusses in detail a vibrational/shaking processing that shears off material, thereby inducing tensile stresses in the product. Because Hashimoto provides no specific discussion of the centrifugal process used, the only conclusion that can be drawn is that the apparatus referred to by Hashimoto is one in which a drum is rotated about its own axis. Nothing else can be permissibly read from the disclosure of Hashimoto.

Therefore, the process of Hashimoto and of the present invention are not the same, nor are they capable of producing the same result. Hashimoto teaches the removal of material from the exterior surface alone, whereas the present invention teaches introduction of compressive (reduction of tensile) stresses into the finished part.

2. Vankov and Hashimoto Cannot Be Combined

The Examiner has not established that it would be possible to use the process of Hashimoto make the blade of Vankov. Rather, there is a strong suggestion that the Hashimoto process could not be used to make the Vankov blade. In particular, the surface finishing process of Vankov requires masking off one surface of the product "with adhesive tape" or similar means (col. 6, lines 6-7 and 45-46) prior to subjecting the part to electropolishing. Vankov details the particular advantages of using electropolishing for finishing the exposed surfaces (col. 5, line 63 through col. 6, line 14), and specifically touts the simplicity of this process over "elaborate mechanical polishing processes using polishing wheels" (col. 5, lines 6-7). Vankov makes no intimation that any other polishing process could be used to effect the desired result, and instead focuses on the advantages of the electropolishing method chosen. Further, this statement shows

a clear intention by Vankov to not use a mechanical finishing process like that of Hashimoto. Thus, Vankov teaches away from the combination presented by the Examiner. A teaching away set forth in the key reference is clear evidence that a person of ordinary skill in the art would not be motivated to make the combination set forth by the Examiner.

Additionally, the Examiner has presented no evidence that the process of Hashimoto would sharpen the cutting edges of Vankov's blade at the juncture between the masked and unmasked surfaces (col. 6, lines 8-17) to achieve the same result as electropolishing. Further, Hashimoto never mentions electropolishing, and there is no evidence that Hashimoto regards the vibratory finishing processes as substitutable or in any way equivalent to an electropolishing process. Rather, there is a reasonable expectation that the Hashimoto process could not be successfully applied as a substitute for electropolishing to produce Vankov's product. It is highly unlikely that the adhesive tape used by Vankov to mask one surface of the blade during polishing would stand up to the abrasive finishing media to which it would be exposed under the Hashimoto process. As such, it is impossible to predict the effect of the Hashimoto process on the masked surface and on the edge at the juncture between the masked and unmasked surfaces. Indeed, it is probable that the Hashimoto process, when applied to Vankov's blade, would round the edges of the blade rather than sharpening them. Therefore, without an expectation that the substitution would work, a person of ordinary skill in the art would not be motivated to use the Hashimoto process to make the Vankov product.

In sum, Vankov and Hashimoto cannot properly be combined because Vankov teaches away from the combination and because there is not a reasonable expectation that the Hashimoto process could be used to produce the product of Vankov.

3. Williams and Hashimoto Cannot Be Combined

The deficiencies noted above with regard to the combination of Vankov and Hashimoto apply equally to the combination of Williams and Hashimoto. Furthermore, the Examiner's Answer does not address Appellant's arguments in the Appeal Brief that the combination of Williams and Hashimoto is deficient. Accordingly, Appellant respectfully requests that the Board consider Appellant's arguments as being un rebutted, and thus conclusive, regarding the inappropriateness of the combination of Williams and Hashimoto.

F. The Examiner's Answer Fails to Address Appellant's Arguments Regarding Gakhar

The Examiner's Answer does not address Appellant's arguments in the Appeal Brief as to the deficiency in the combination of Gakhar with Vankov or Williams in view of Hashimoto. The Appeal Brief notes that Gakhar cannot be combined with the Vankov-Hashimoto or Williams-Hashimoto reference combinations because Gakhar relates to a completely different field of use and the addition of the Gakhar elements would render the Vankov and Williams blades inapt for their desired purposes. The Vankov and Williams blades do not need the circular configuration and anti-kickback portions of Gakhar, and there would be no suggestion or motivation to make either of these combinations. Additionally, the low friction surface of Gakhar is a coating on the blade and not a polished surface of the blade material itself.

Because the Examiner's Answer fails to address these arguments, Appellant respectfully requests that the Board take Appellant's arguments as being unrebutted, and thus conclusive, regarding the inappropriateness of the combination of Gakhar with either Vankvo-Hashimoto or Williams-Hashimoto.

4. CONCLUSION

Based on the foregoing, Appellant respectfully request that the Board reverse the Examiner's rejections of claims 1-6 and 13-19.

In regard to claims 1, 2, 6, 13, 14, 18, and 19, neither Vankov nor Williams anticipates every element of the recited invention, as required under 35 U.S.C. § 102. In regard to claims 1, 2, 4-6, 13, 14, and 16-18, neither Vankov in view of Hashimoto or Williams in view of Hashimoto renders obvious the recited invention, as required under 35 U.S.C. § 103. In regard to claims 3 and 15, neither Vankov-Hashimoto or Williams-Hashimoto, further in view of Gakhar, renders obvious the recited invention, as required under 35 U.S.C. § 103.

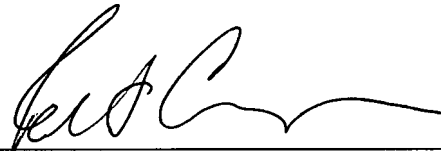
Appellant respectfully submits that claims 1-6 and 13-19 are allowable and that the Examiner's rejections are in error. In particular, it is noted that claim 19 has been rejected only under §102, and not under § 103, in the Examiner's Answer. Hence, in the event that the §102 rejection of claim 19 is reversed by the Board, Appellant requests that claim 19 be indicated as allowed.

Accordingly, Appellant continues to request that the Board reverse the Examiner's rejection of claims 1-6 and 13-19 in the instant application.

Respectfully submitted,

STEVE E. HOFFMAN

BY:



ROBERT E. CANNUSCIO
Registration No. 36,469
Drinker Biddle & Reath LLP
One Logan Square
18th and Cherry Streets
Philadelphia, PA 19103-6996
Tel: 215-988-3303
Fax: 215-988-2757

Attorney for Applicant